

REMARKS

Claims 1-14 and 21-29 are pending. All pending claims stand rejected. The Figures and the specification are amended as discussed below. No new matter is introduced. Applicant respectfully requests reconsideration of the rejections based on the following remarks.

Amendment to Drawings and Specification

One embodiment of the present application utilizes capillary channel structure detailed in U.S. Patent 5,200,248 to Thompson et al., entitled "Open Capillary Channel Structures, Improved Process For Making Channel Structures And Extrusion Die For Use Therein". A cross sectional view of polymeric fiber used in this particular embodiment of the embolism protection device of the present application is added to the right portion of Fig. 18A to facilitate the prosecution of the application. Corresponding description of the added figure is also added. The specification is additionally amended to add description of the capillary channel structures of Thompson. Support for the amendment to the Drawings can be found for example in Figures 18, 24 and 25 of Thompson. Support for the amendment to the Specification can be found for example in Col. 4, lines 39-57 of Thompson. Thompson is incorporated by reference in the original application. The addition of the figure as well as corresponding description of the figure and the depicted capillary channel structures are therefore not new matter. The amendments made herein are for the purpose of facilitating prosecution only.

Rejection under Section 112

I. The Examiner rejected claims 1-14 and 21-29 under 35 U.S.C. § 112, second paragraph for failure to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner asserted that "claim 1 is unclear how one or more grooves occur along the length of the surface capillary fibers." Applicants respectfully

request reconsideration of the rejection based on the following comments. Claim 1 describes the fibers as "...having surface capillaries characterized by one or more grooves along the length of the fiber...". Claim 1 therefore clearly defined surface capillaries as having the characteristic of one or more grooves along the length of the fiber. The term "groove" in general defines "a long narrow channel or depression" according to Merriam Webster Dictionary. People with ordinary skill in the art would be able to recognize the claim language of claim 1 clearly defines that:

1. the fibers have capillaries that are situated on the surface of the capillary, i.e. "...a plurality of fibers...having *surface capillary*...";
2. the surface capillaries are surface grooves on the fiber, i.e. ...a plurality of fibers...having *surface capillaries characterized by one or more grooves*...";
3. the surface grooves are aligned along the length of the fiber, i.e. "a plurality of fibers...having surface capillaries characterized by *one or more grooves along the length of the fiber*...".

Additionally, as discussed above, the drawings and the specification are amended to illustrate the surface capillary of the fibers. Claims are to be interpreted in the context of the specification. In view of the amendment to the drawings and the specification and the explanation of the claim language above, the applicants respectfully submit that Claim 1 particularly points out and distinctly claims the subject matter which applicants regard as the invention. Accordingly, the applicants respectfully request withdrawal of the rejection.

II. The drawings of the application are objected to under 37 CFR 1.83(a) as not illustrating the grooves of claim 1. A schematic diagram of a cross sectional view of a fiber with surface capillaries characterized by one or more grooves is added to Fig. 18A to illustrate the grooves of claim 1. The specification is additionally amended to reflect the addition of the drawing. The amendment to the drawings as well as corresponding description of the drawing in the

specification obviates the Objection. The applicants respectfully request withdrawal of the Objection.

Rejections under Section 103(a)

I. The Examiner rejected claims 1, 5, 9, 10, 13, 14, 21, 23-26, 28, and 29 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,395,014 to Macoviak. With all due respect, the Examiner has misinterpreted the features in claim 1 of the present application. First of all, the grooves along the length of the fibers of claim 1 of the present application are on the surface of the fibers as illustrated in amended Fig. 18A. The grooves, therefore, are an integral component of the fibers. In contrast, the open spaces of Macoviak cited by the Examiner are in between the fibers. The groove of the present application is NOT equivalent with the open space of Macoviak in either a structural or functional sense. For instance, being an integral part of the fiber, the characteristics of the groove is substantially independent of and not significantly affected by how the fibers are put together. The open spaces of Macoviak, however, are dependent on and affected by the relative position of the fibers. The Examiner's interpretation "a plurality of fibers 112 which has surface capillaries with grooves extending along the length of the fiber (fiber 112 have multiple of open space thus these open space are equivalent with groove which occurs along the length of fibers 112)" is simply not reasonable.

Secondly, the fibers of claim 1 blocks particulates with a diameter greater than 0.2 mm. The size 0.2 mm referenced in claim 1 is directed to the size of particulate, not the filter itself. The Examiner cited 0.2 mm as the expansion diameter of the device (page 4, 1<sup>st</sup> paragraph of the Office Action) is unfounded. Claim 1 does not exclude the ability of the filter to trap particulates that has a diameter less than 0.2 mm. The size of the particulates the filter traps are not the expansion diameter of the device as alleged by the Examiner. The Examiner's interpretation that

the diameter 0.2 mm of the particulates trapped can be translated into the expansion diameter of the device of claim 1 is simply erroneous.

One of the key features of the present invention is the utilization of surface capillary fiber to construct the embolism protection device. Because of the presence of grooves on the surface of the fiber, when the fibers are grouped together and fill the cross section of a given vessel, regardless of 1) the size of the cross section of the vessel, 2) the over all expansion size and/or geometry of the bundled fibers, and 3) the size and the amount of the particulates captured, fluid such as blood in the vessel can at least flow through surface capillary of the fibers. The additional fluid flow through the filter provided by the surface capillary of the fibers is especially useful when the pores or spaces in between the fibers are clogged by particulates. When the embolism protection device is deployed to capture particulates, the grooves on the surface of the fiber facilitate fluid flow through the filter when there are trapped particulates to allow fluid such as blood to flow through, thus maintain the normal function of the vessel.

In contrast, Macoviak does not have surface capillaries to provide additional channeling of the fluid inside the vessel. Once the open spaces between the fibers of Macoviak are substantially occupied by particulates, the flow of the fluid inside the vessel through the filter is substantially reduced or even stopped. The clogged filter of Macoviak would therefore have to be removed to restore the fluid flow inside the vessel. In practice, when the size of particulates having diameter greater than 0.2 mm, the open space of the filter such as the one disclosed in Macoviak are easily clogged and the flow inside the vessel disrupted. Since Macoviak does not teach or suggest fibers with surface capillaries, the device of claim 1 is substantially different from and non-obvious over Macoviak. Applicants respectfully request withdrawal of the rejection.

II. The Examiner rejected claims 2-4 and 12 as being unpatentable over Macoviak. Claims 2-4 and 12 are dependent claims of claim 1. As discussed above, claim 1 is not obvious over Macoviak. Claims 2-4 and 12 are dependent claims of claim 1. The devices of claims 2-4 and 12 therefore still have the desirable flow properties provided by the surface capillary of the fiber used as outlined above. In contrast, the flow through the device of Macoviak is provided by the open space in between the fibers only. The device of claims 2-4 and 12 therefore are substantially different from and non-obvious over Macoviak. Applicants respectfully request withdrawal of the rejection.

III. The Examiner rejected claims 6-8, 22, and 27 as being unpatentable over Macoviak in view of Thompson et al. (U.S. Patent No. 5,200,248). The Examiner cited Thompson to supply the missing feature of Macoviak, i.e. Macoviak is silent regarding the fibers being curled or being in a bundle. Claims 6-8, 22 and 27 are dependent claims of the claim 1.

As discussed above, the devices of claims 6-8, 22, and 27 have the desirable flow properties provided by the surface capillary of the fiber used. In contrast, the flow through the device of Macoviak is provided by the open space in between the fibers only. The Examiner cites to Figs. 24-26 of Thompson as support for the concepts of curled fibers and fiber bundles. However, this is incorrect. These figures show cross sections of the fibers showing surface capillaries. These figures simply do not show either a curled fiber or a bundle of fibers. Each figure shows a cross section of a single fiber. A single fiber cannot be a bundle, and a cross section cannot show curling.

Moreover, Thompson itself does not teach to use the surface capillary structures for the claimed type of devices. Thompson is primarily concerned with improved absorbent capacity and wicking ability of the surface capillary structures. Macoviak does not teach that these concepts are relevant for their application, and in the Macoviak device the filter is immersed in

blood, so absorption and wicking do not seem directly relevant. The device of claims 6-8, 22 and 27 therefore are non-obvious over Macoviak in view of Thompson. Applicants respectfully request withdrawal of the rejection.

#### CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

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